

CLAIMS

What is claimed is:

1. A packet switching system comprising:

a plurality of first components, each of the plurality of first components including:

5 a storage device for storing received information, and control logic for receiving information and for updating the storage device with indications of the received information;

a plurality of second components;

10 a plurality of paths between each of the plurality of first components and each of the plurality of second components;

wherein each of the first components is configured to sequence through a portion of the storage device, and to send information stored at a current location within the portion of the storage device over the plurality of paths to each of the plurality of second components; and

15 wherein each of the plurality of second components receives said information sent from each of the plurality of first components, and each of the plurality of second components is programmed to forward said received information received from a particular one of the plurality of first components.

20 2. The packet switching system of claim 1, wherein the information includes flow control information.

3. The packet switching system of claim 1, wherein each of the first components corresponds to a first stage switching element of a switching fabric.

25 4. The packet switching system of claim 3, wherein the switching fabric includes a Benes topology.

5. A method performed by each of a plurality of switching elements in a packet switching system for collecting and distributing information, the method comprising:

maintaining a data structure;

receiving said information;

- 5 updating the data structure in response to said received information; and
repeatedly: sequencing through the data structure, extracting a current value at a
current position within the data structure, and sending the current value over a plurality of
predetermined routes to a plurality of traffic sources.

- 10 6. The method of claim 5, wherein said information includes flow control
information.

7. The method of claim 5, wherein at least a portion of the predetermined routes
for all of the plurality of switching elements are non-overlapping.

8. The method of claim 5, wherein the packet switching system includes a Benes
switching fabric.

- 15 9. The method of claim 8, wherein each of the plurality of switching elements
includes a first stage switching element.

10. The method of claim 8, wherein each of the predetermined routes between
each of the plurality of switching elements and each of a plurality of final stage switching
elements is used only by one of the plurality of switching elements.

- 20 11. The method of claim 5, wherein said values are distributed to input interfaces
or line cards of the packet switching system.

12. The method of claim 5, wherein said information is received from one or more
packet destination components of the packet switching system.

13. The method of claim 5, wherein sending the current value includes adding an address indication of the current position and the current value to one or more fields of one or more packets.

14. The method of claim 13, further comprising periodically sending one or more
5 packets without said information.

15. The method of claim 5, further reconfiguring the plurality of predetermined routes in response to detecting a failure condition.

16. The method of claim 5, further reconfiguring said predetermined routes upon receiving a command.

10 17. The method of claim 16, wherein the command includes at least one new predetermined route.

18. A computer-readable medium containing computer-executable instructions for performing the method of claim 5.

19. A packet switching system comprising a plurality of components, each of the plurality of components including:

means for maintaining a data structure;

means for receiving information;

5 means for updating the data structure in response to said received information;

and

means for repeatedly sequencing through the data structure, extracting a current value at a current position within the data structure, and sending the current value over a plurality of predetermined routes to a plurality of traffic sources.

10 20. The packet switching system of claim 17, wherein said information includes flow control information.

21. The packet switching system of claim 17, wherein said packet switching system includes a Benes switching fabric.

15 22. The packet switching system of claim 21, wherein each of the plurality of components includes a first stage switching element.

23. The packet switching system of claim 19, further comprising means for periodically sending one or more packets without the current value.

24. A packet switching system comprising:

a plurality of first stage switching components; and

a plurality of last stage switching components;

5 wherein each of the plurality of first stage switching components includes means for maintaining a data structure; means for receiving flow control information; means for updating the data structure in response to said received flow control information; and means for repeatedly sequencing through the data structure, extracting a current value at a current position within the data structure, and sending the current value over a plurality of predetermined routes to the plurality of last stage switching components; and

10 wherein each of the plurality of last stage switching components includes means for receiving flow control information from the plurality of first stage switching components; and means for forwarding said flow control information received from the plurality of first stage switching components to a plurality of attached traffic sources.

15 25. The packet switching system of claim 24, wherein the packet switching system includes a Benes switching fabric.

26. A packet switching system comprising:

a plurality of first components, each of the plurality of first components including:
means for storing received flow control information, and means for receiving flow control
information, and means for updating the storage device with indications of the received
5 flow control information;

a plurality of second components;

a plurality of paths between each of the plurality of first components and each of
the plurality of second components;

wherein each of the first components includes means to sequence through a
10 portion of the storage device, and means to send flow control information stored at a
current location within the portion of the storage device over the plurality of paths to each
of the plurality of second components; and

wherein each of the plurality of second components includes means to receive
said flow control information sent from each of the plurality of first components, and
15 means to forward said received flow control information received from a particular one of
the plurality of first components.

27. The packet switching system of claim 26, wherein the switching fabric
includes a Benes topology.